



U.S. NAVAL ACADEMY SAILING PROGRAM



Offshore



Intercollegiate



CSNTS



P-100

To ensure safety at sea, the best that science can devise and that naval organization can provide must be regarded only as an aide and never as a substitute for good seamanship, self reliance, and a sense of ultimate responsibility which are the first requisites in a seaman and naval officer

Fleet Admiral Chester W. Nimitz
Letter to the Pacific Fleet
1945

Navigation 4
Review & Lessons Learned

LCDR Neil Covington
Training Officer, Naval Academy Sailing



Course Overview...

- The Chart
 - Primary emphasis on chart preparation
- The Fix
 - Visual & Electronic
 - Accuracy and errors
- The DR
 - The most important thing on the chart
- Navigation Party
 - Organization, procedures & philosophy
- Making landfall
 - The Navigation Brief
- Review & Lessons Learned
- Navigation Practical



The Chart Prep Checklist...

Navy Sailing Chart Preparation Checklist

Chart Number _____

1. Note the chart's sounding datum (X the appropriate box).

Fathoms _____ Feet _____ Meters _____

2. Box the Sounding Datum. Highlight this in Orange and verify that it's visible after the chart is folded for use. If not - annotate it where it can best be seen.

3. Enter the vessel's draft (i.e., 7.5 feet)

- Use the same units as the chart's sounding datum

4. Round up _____

5. Define Your Risk Factor: _____

- Knowledgeable Crew/Racing Risk Factor = 1
- Novice Crew/Training Risk Factor = 2 or 3

6. Calculate minimum sounding line as follows:

- Multiply the number from Block 4 by the Risk Factor defined in Block 5

_____ X _____

(i.e., For a CENTS Cruise: 8 feet times 2 = 16 ft)

6. Review the chart for actual sounding datum. Choose one based on Block 6 above (if required, round up): _____

7. Highlight this sounding line with a dark blue marker. Pay particular attention to the rate of change of depth, and mark the chart accordingly.

8. Visual Nav Aids: Carefully review the chart, and identify visual nav aids:

- Circle, highlight in yellow, and label ABC (where ABC is an easily spoken, unmistakable noun name)

9. Nav hazards: Carefully review the chart, and identify unlighted buoys and other nav hazards.

- Circle, highlight in pink, and label UNLIT ABC/NAVHAZARD ABC.

10. Radar Nav Aids: Carefully review the chart, and identify radar nav aids.

- Triangle, highlight in orange, and label ABC
- Pay particular attention for RACON buoys. These should have a circle and a triangle, and be labeled RACON ABC

11. Track: Draw and label the track.

- The track can be drawn down the center of the deep draft channel to alert the watchsection to the expected location of merchant traffic.

12. Shoal Water: Using the blue line defined in 7 above, slash the shoal water areas in blue, and double slash those areas where soundings won't provide meaningful backup.

13. Fold and label: Fold and label the chart as follows:

- Fold the chart in fourths
- Label the corner with the fold with the chart's noun name in large letters. Immediately above/below list the next chart along the north/southbound track

14. Verify Currency: Immediately prior to use, verify the chart is up to date by querying the NIMA Notice To Mariners Database at:

http://pollux.nss.nima.mil/untm/untm_j_options.html?class_flag=N

Latest Chart Edition _____ On-hand Chart Edition _____

Latest Notice To Mariners _____

CHART UPDATED THROUGH NOTICE TO MARINERS _____ / _____
Number Date

Submitted: _____ Reviewed: _____
Midshipman Navigator AOIC/Navigator

Approved: _____
Officer In Charge



Principles & Practice of Basic Navigation

- Fix taking
- Fix evaluation
- “Minimum Cyclic Routine”
 - Plot, Label, DR.. Plot, Label, DR.. Plot, Label, DR...
- Situational Awareness & “Gut Feel”
- Watch Captain involvement
- Midshipman Navigator involvement
- Officer in Charge involvement



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The Fix...

The Fix is:

WHERE YOU “WERE”

And...

THREE DIMENSIONAL

“Sounding – Checks with chart”



The Fix...

Treat Every Fix With

Suspicion



The Bottom Line...

The DR is:

The Single Most Important Thing On the Chart



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The OIC/AOIC...

The safe and proper navigation of Sail Training Craft (STC) is, at all times, the responsibility of the assigned Officer in Charge (OIC).

The OIC shall delegate navigational authority to the embarked midshipmen whenever possible in order to enhance their training; however, ultimate responsibility will

reside permanently with the OIC



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Making Landfall...

Navigation Brief

The Chart Shift

- Many navigation mistakes occur at the chart shift point
- OIC should approve Chart Shift – as follows:

“Officer in Charge, my DR holds us leaving this chart in 30 minutes. Recommend shifting to chart 12224”

“Very well. Shift to Chart 12224.”

“Shift to Chart 12224, Aye.”



How Do You Do The Shift???

What should you look for personally to make sure this is done correctly?

- The **back** of the current chart – Make sure the number matches what you calculated when warm, dry and rested!!!



How Do You Do The Shift???

Check it – and not in a perfunctory manner

- What do I mean by that?
 - Check the log entry – It's your logbook!!!
 - Compare what's written to the displayed data
 - Break out the dividers and plot it - yourself
 - Or, shoot a round – yourself
 - Then initial the log book



What Do The OIC/AOIC Need To Know?

You should be able to sketch the key elements of the chart from memory

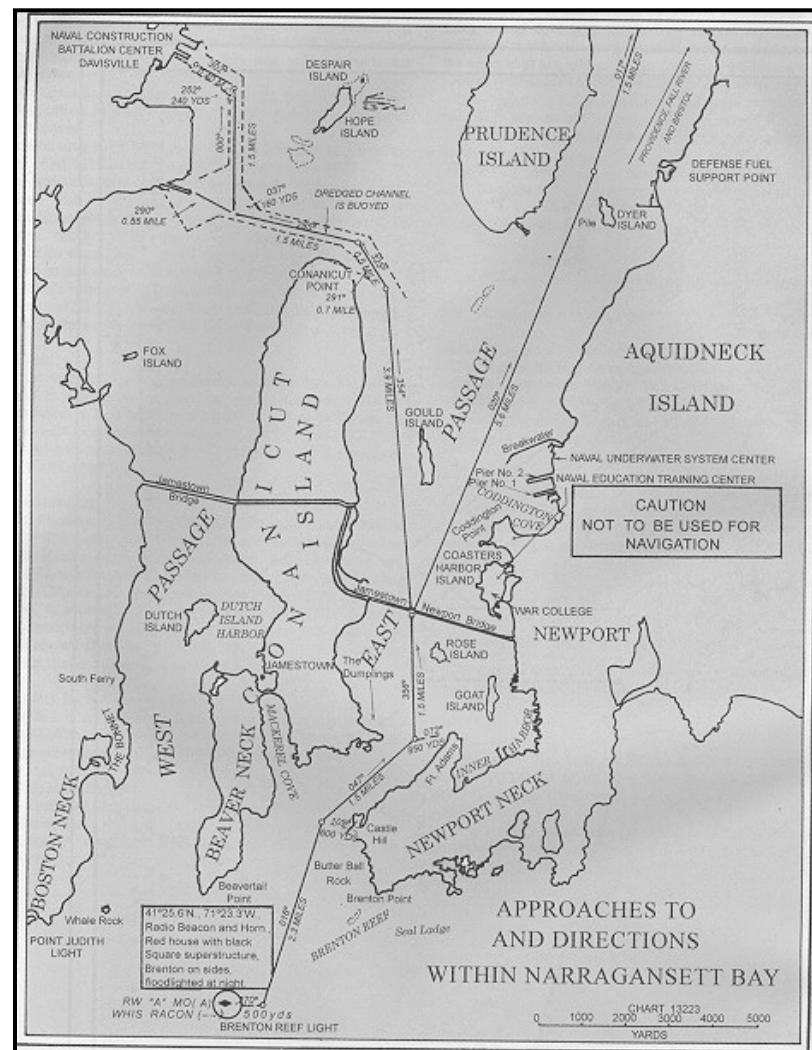
- Pay particular attention to expected nav aids, nav hazards and courses to steer (memorize the dots)

If you're mentally challenged, and after several days off shore you may be...

- Make a gouge
 - You can copy (and better laminate) sections of the chart, pages from Reed's and/or the Fleet Guide
- Write notes to yourself on the reverse



For example...





How you get in trouble...



Uncertainty...

- Any time you aren't sure where you are – what do you do??
 - One average guy calls for the chart to be brought topside
 - Oops, there goes the chart!**
 - Another average guy goes below to look at the chart
 - You step on the trigger on the way down**
 - Turn around and go back down your track
 - Figure it out, then turn back around



A Few More No Nos...

Buoy Hopping

- Fully crewed yacht whose mission it is to teach Navigation

Play “Follow the leader”

- Never turnover navigational responsibility to an external agent
- Don't misunderstand – This doesn't mean ignore local knowledge

Drive at night without your headlights on

- DR always, always ahead of the boat



A Few More No Nos...

Go Faster Than Your Team Can Support

- Fully crewed yacht
- How well are they trained???

However...

Your job is to push them...

But make sure you have a safety net!!!



Memorize these, and you'll be able to anticipate DNAS/DDNAS response to issues.

1. An inferior program risks producing officers with inferior knowledge, attitudes, and performance that will have to be corrected in the Fleet.
2. An inferior program can result in a serious incident that puts our midshipmen and our entire sailing program at risk.
3. An inferior program puts the reputation of the Naval Academy and the Navy at risk before a public that properly expects the highest standards of performance.

We Occasionally Make The Front Page...

The Navy Comes Ashore At Wasque

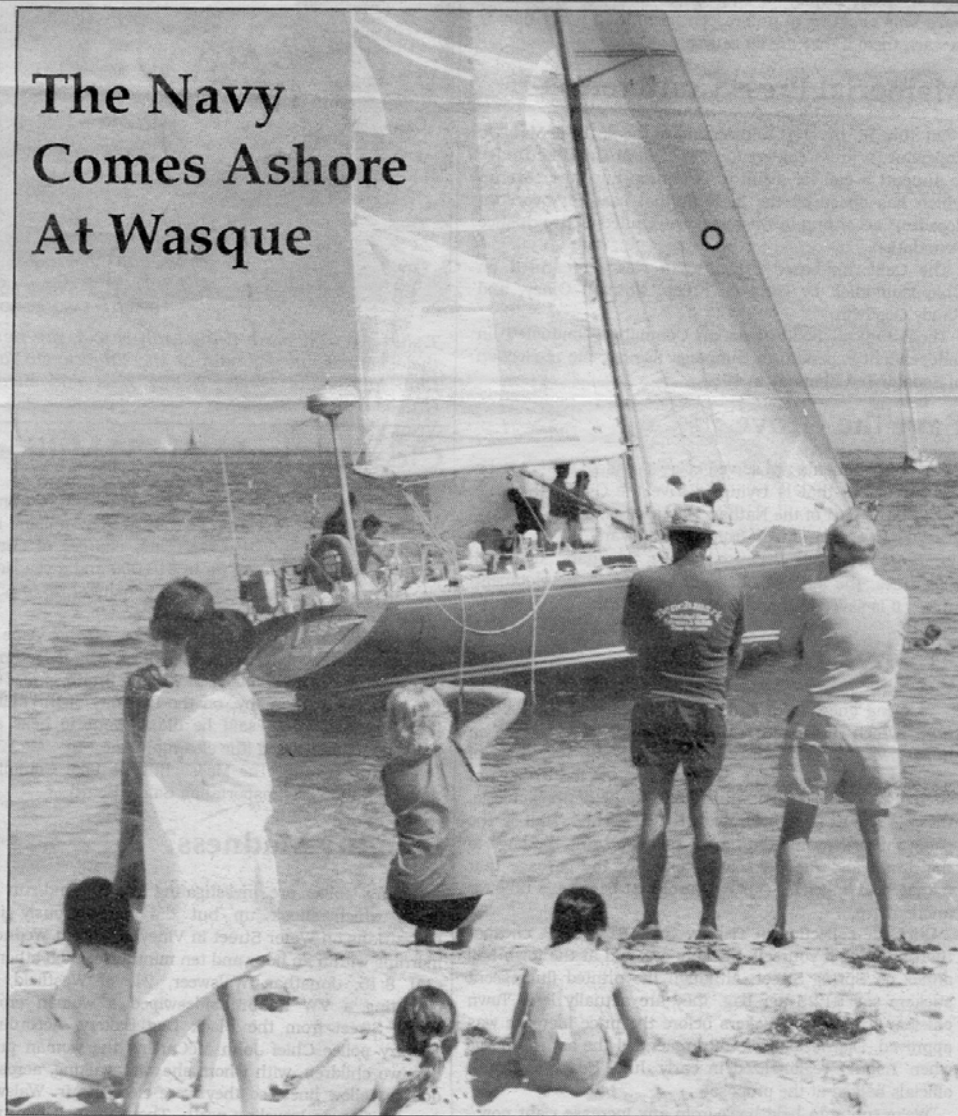


PHOTO BY NELSON SIGELMAN

The sloop Fearless from the Naval Academy at Annapolis, racing in the Edgartown Regatta, ran aground on a sandbar off Wasque Point, and there it stuck. Whoops.

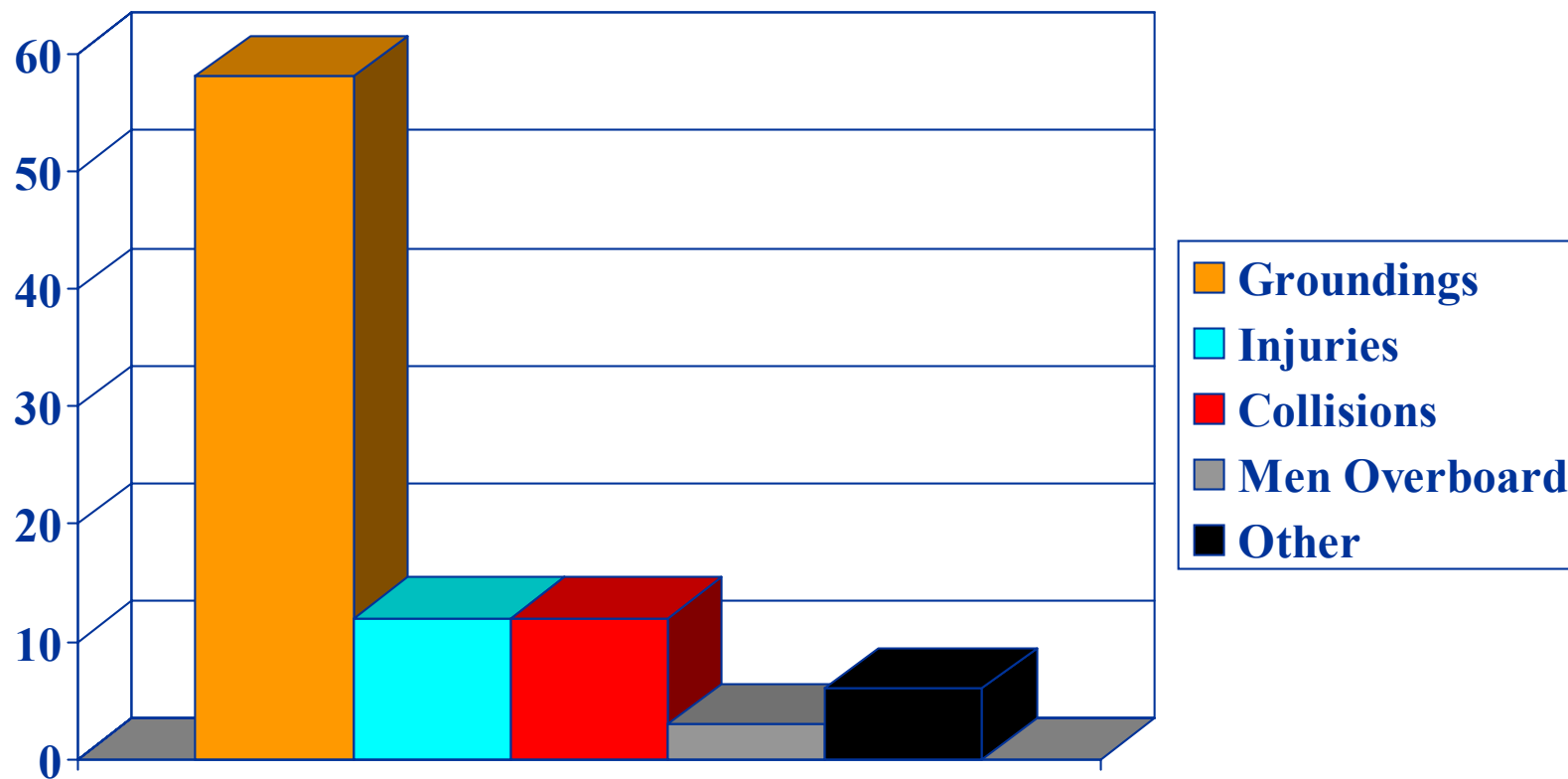
Front Page News

The sloop Fearless from the Naval Academy at Annapolis Ran Aground on a sandbar off Wasque Point, and there it stuck. Whoops.



Incident Summary...

1991-2001



In many grounding cases the boat was where it should have never been!



Assessment Of Navigation Practices

- Two summers ago we had a lot of navigation related incidents...
- Last Winter we conducted Navigation Training for all personnel
- Interim checks:
 - Graded navigation practicals
 - Observed spring on-the-water training
 - Benchmark – no groundings in our backyard
- Discussed real metric would come during the summer
 - Our on-the-water performance
- So, How did we do?



How We Did

- Observed commencement of Block I
 - No groundings on the “Down & Back”
 - Contributing, revised DNAS OPORDER to refer to this as: **Phase II Crew and Vessel Certification**
- Summer Cruise Summary
 - Reviewed each crew’s charts and chart work
 - Significant improvements observed



However, We're Not Done Yet

Still, Too Many Incidents Occurred

- DDNAS and Vanderstar Chair carefully reviewed the circumstances of each incident
- Assessment:
 - Still have a widely varying standard
 - Arguably, our most experienced OICs had the incidents
 - Most are long-term participants who had not attended the navigation training



Summer 2002 Incident Summary

Block I

- Seasickness requiring MEDIVAC
- Allision with Bridge – Newport Harbor
- Grounding - Bermuda

Block II

- Accidental Jibe with injury
- Grounding – Coaster's Harbor
- Grounding - Delaware River
- Collision - Resulting in loss of a mast
- Fuel contamination - Resulting in loss of engine

Block III

- Shroud failure – No mast failure
- Close aboard contact – Chesapeake Bay
- Grounding - Exit of C&D Canal

- Grounding - Coast of Maine

Block IV

- Grounding - Eastern Bay
- Grounding - Greenbury Point
- Failure to reach Newport
- Allision with buoy while motoring – Delaware River



Navigation Related Incident Summary

Summer 2002

- Grounding - Coaster's Harbor
- Grounding - Bermuda
- Grounding - Delaware River
- Grounding - Exit of C&D Canal
- Grounding - Coast of Maine
- Grounding - Eastern Bay
- Grounding - Greenbury Point
- Allision with bridge – Newport
- Allision with buoy – Delaware River (motoring)



Post Critique...

Actual Root Causes

- OIC not setting the right standard
- OIC focused on the wrong set of priorities
- Nav Party not manned when required
- Post mission let down
- Midshipman steering errors

Note:

None of these say “Poor navigation skill on the part of the midshipmen...”



Root Causes from mid-1990s

- Failure to perform basic navigation functions
- Failure to adhere to the established navigation doctrine
- Failure to comply with Rules of the Road
- OIC preoccupied with events “inside the lifelines”

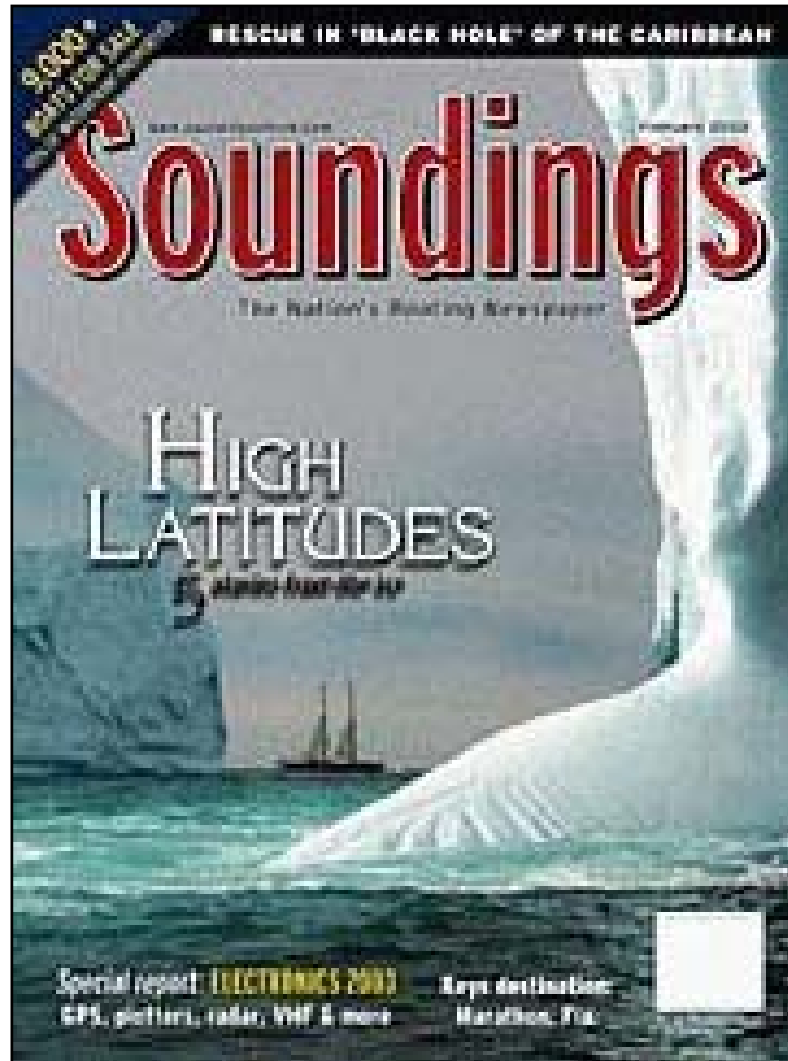


Do you recognize these people?





Have You Seen This Article???



Kennedy schooner finds a sandbar

By JoAnn W. Goddard STAFF WRITER

Sen. Edward Kennedy's vintage schooner, Mya, was slightly damaged en route to winter storage after going up on a sandbar near Cape Cod's Cold Storage Beach. The 50-footer got hung up on a bar just outside the breakwater, near Dennis, Mass., Dec. 1, according to Dennis harbormaster Edward Goggin Jr.

A two-man delivery crew had taken Mya from her home port of Hyannis (Mass.) Harbor and through the Cape Cod Canal, bound for Northside Marine on Sesuit Harbor in East Dennis. Winds were blowing north/northwest at 40 to 50 knots, and rough seas made transiting the shallow area difficult, according to Goggin.

The schooner grounded in the sand about 150 feet from shore. The crew was able to walk ashore. Initial attempts to free Mya were unsuccessful, prompting fears that the battering waves would damage the wooden schooner.

Work crews pumped water from the hull and stabilized her with a line run from the schooner to shore. A small

crowd gathered the following morning at high tide to watch as the sailboat was towed off the bar. Mya was taken to the marina.

There were a few scrapes and at least one small hole in the hull, says Goggin, adding that there appeared to be no major damage to the keel or hull.

Mya has been in the Kennedy family for about 20 years, according to Kennedy's staff. She is a familiar sight



Sen. Edward Kennedy's 50-foot schooner, Mya, ran aground Dec. 1 off East Dennis, Mass.

each year in races around Cape Cod and the islands, including the annual Figawi race from Hyannis to Nantucket and back. Mya recently had taken members of the Kennedy family on their traditional Thanksgiving cruise.

An avid sailor, Kennedy was notified of the grounding. Witnesses say he made a brief appearance to check his boat. ■



Some Quotable Quotes...

- “In my judgment, the root cause of the incident was the inexperience of the skipper in handling a boat under power and the lack of proper chart preparation.”
- “The VOST needs to take some days when there is insufficient wind for practice to learn boat handling under power and navigational requirements.”



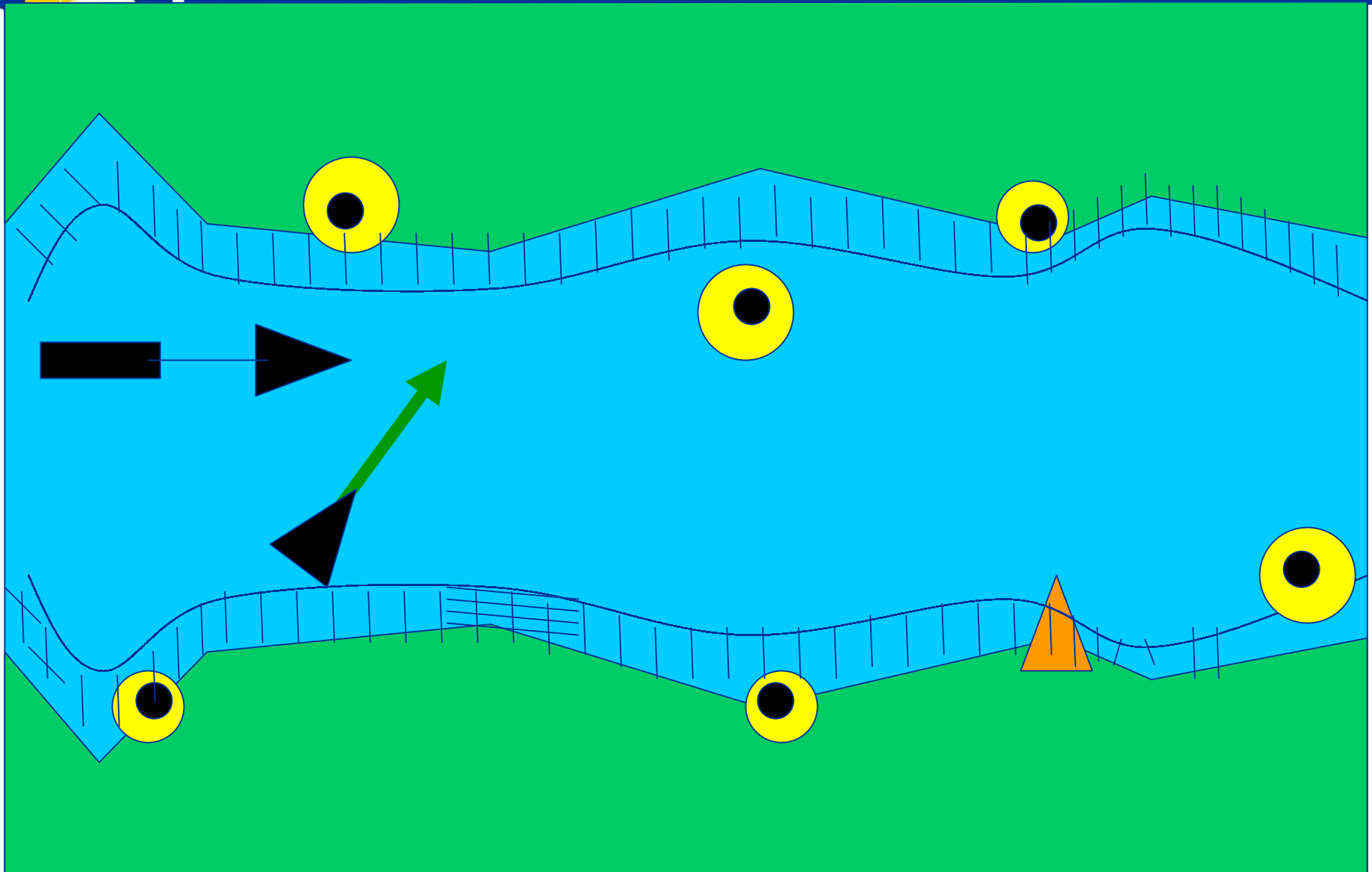
What Do You Think Was The Root Cause Of The Incidents?



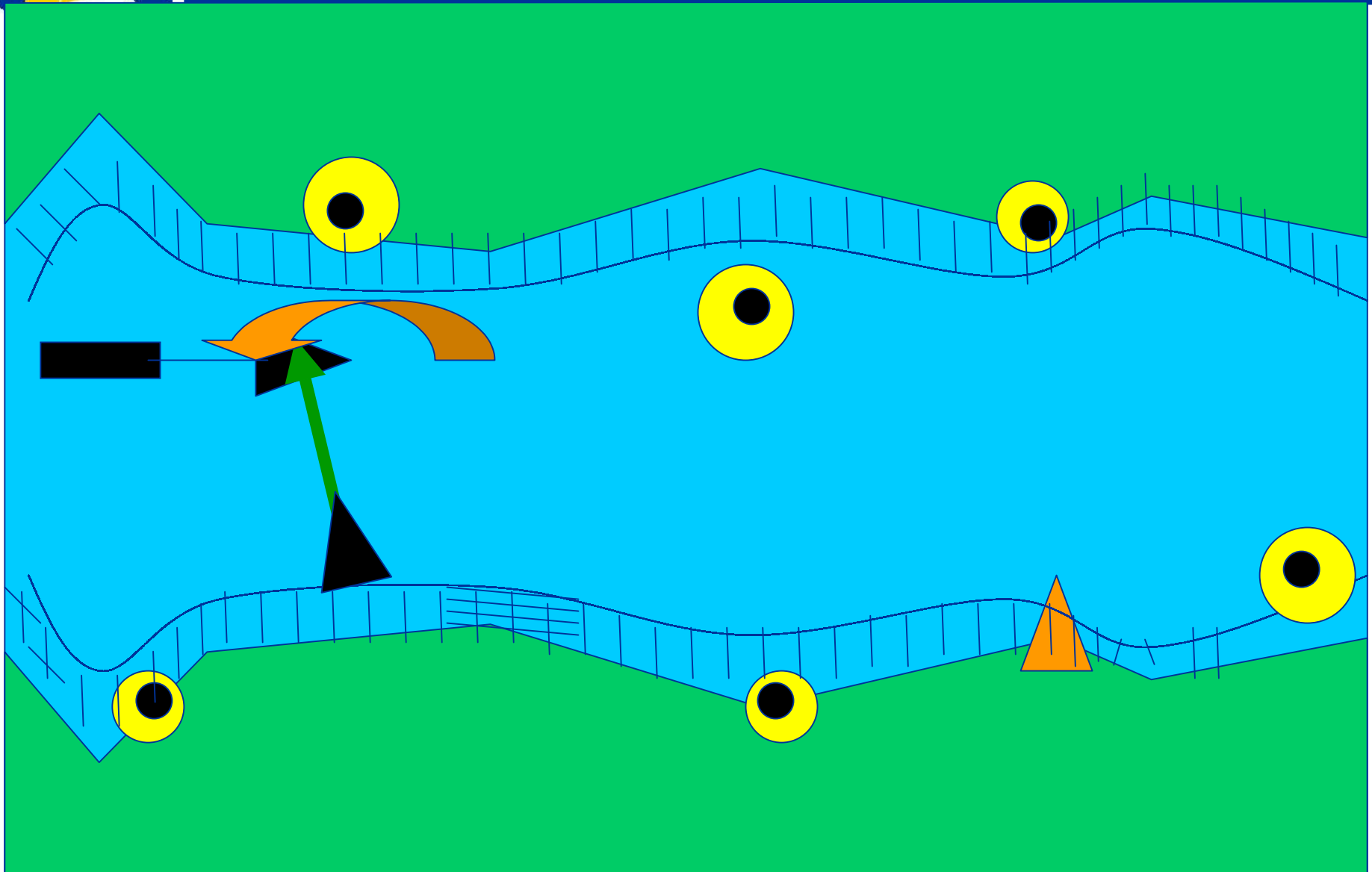
Other Objectives

- Bridge to Bridge Communications
- Midshipman steering errors
- Contact management and avoidance
- Preventer use and rigging

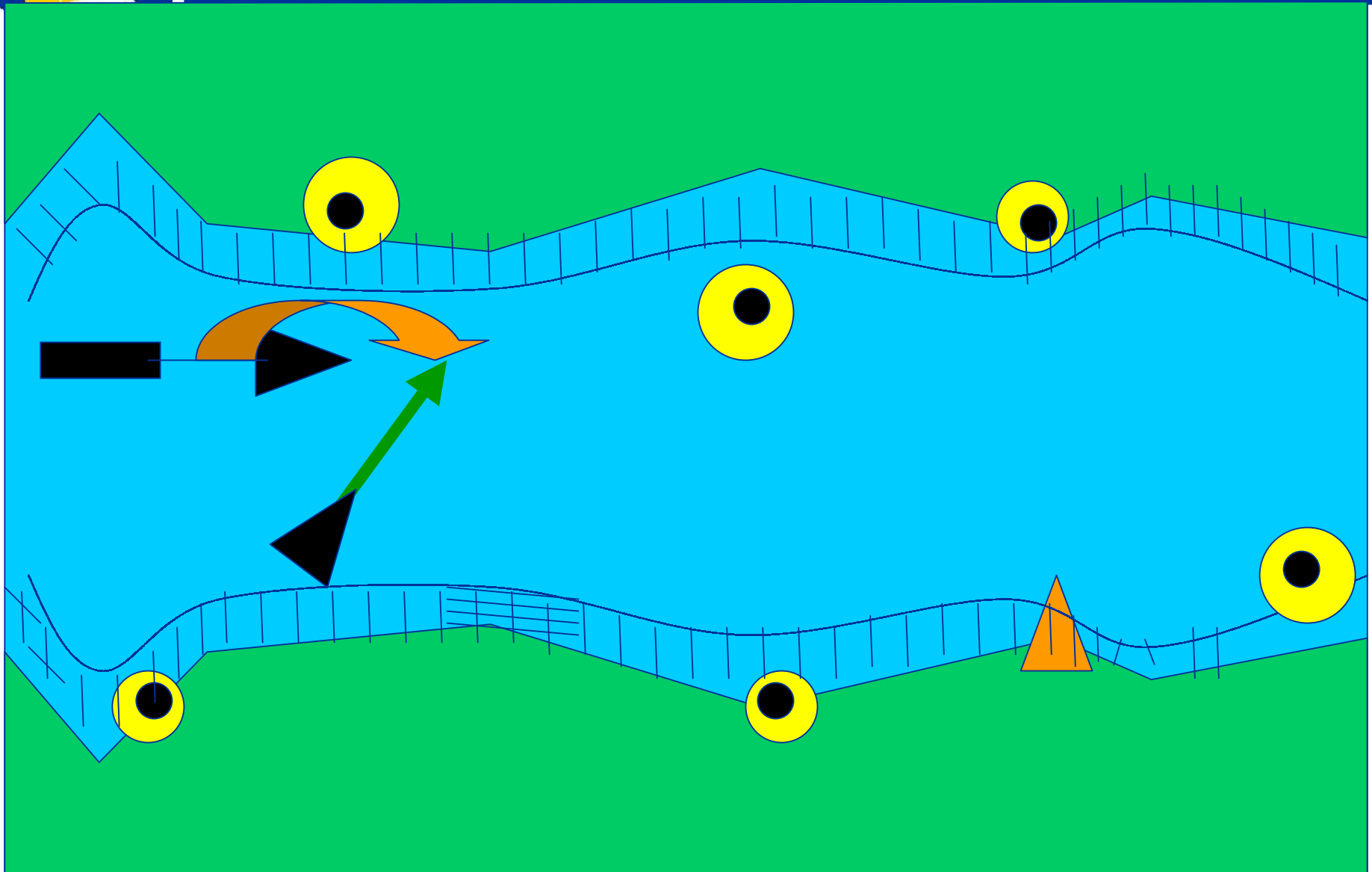
Near Collision With A Tug



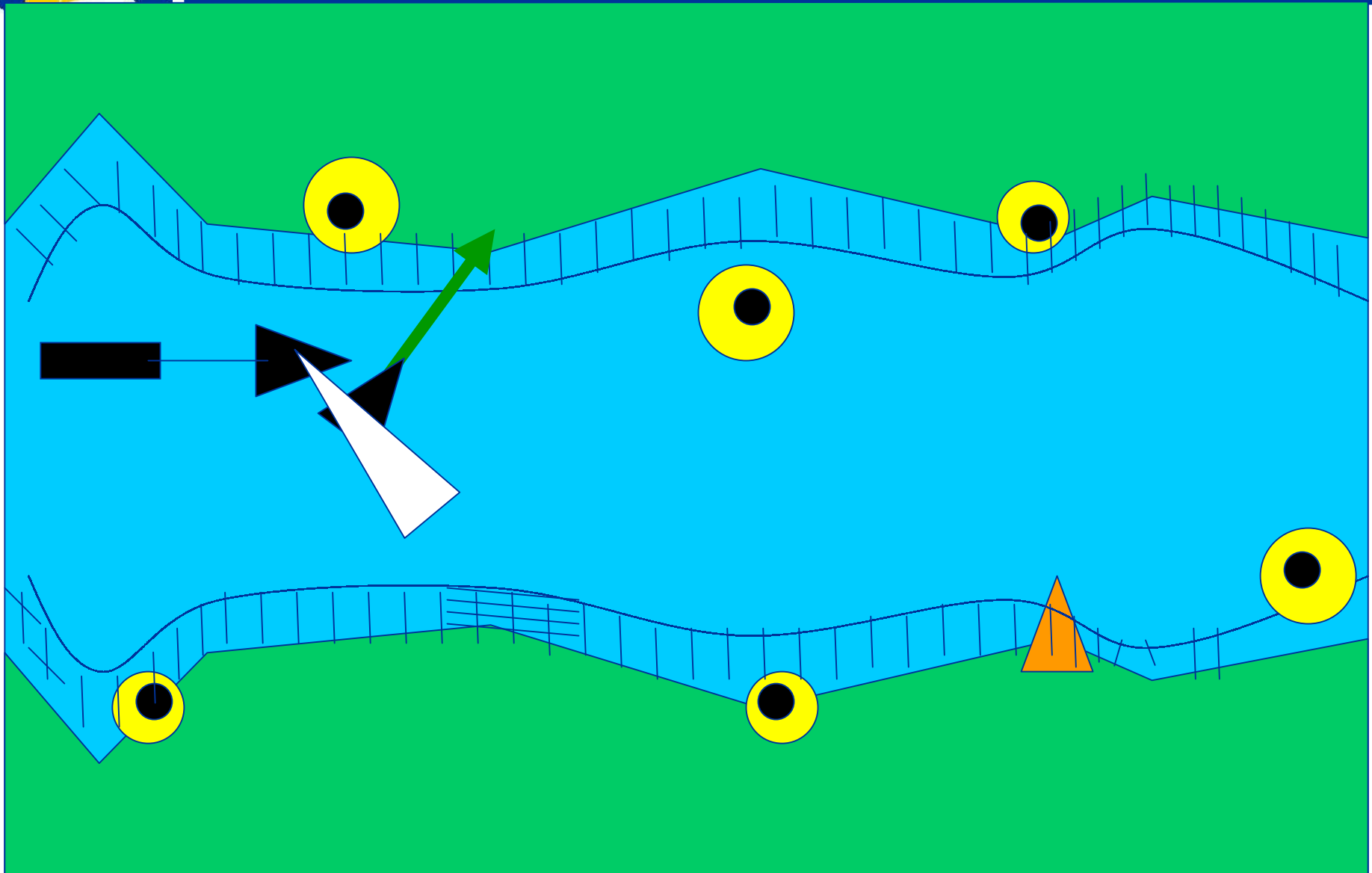
Near Collision With A Tug



Near Collision With A Tug



Near Collision With A Tug





American Promise







The Preventer

- What does a preventer prevent?
- How do you rig a preventer?
- What does it mean to be sailing “By the lee”?



The Preventer





The Preventer





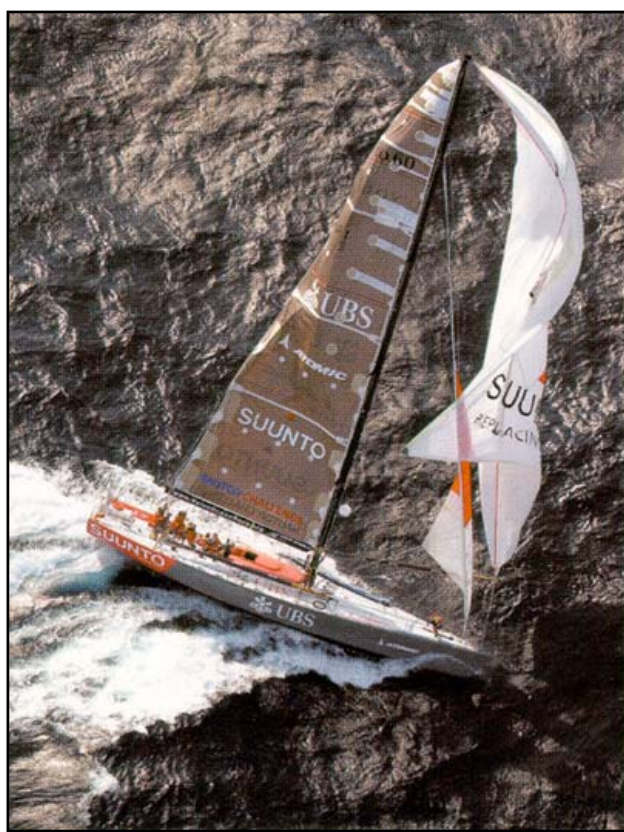
The Preventer

Note – Turns on the winch!!!





Why turns on the winch?





Why turns on the winch?





In Summary...

We Need Your Help To Solve These Problems

- You'll be on the water
- Navigation – The standard is, and has always been, **Perfection**
- Contact management and avoidance
- Bridge to Bridge Communications
- Preventer use and rigging
- Medium weather sailing skills
- Midshipman steering errors



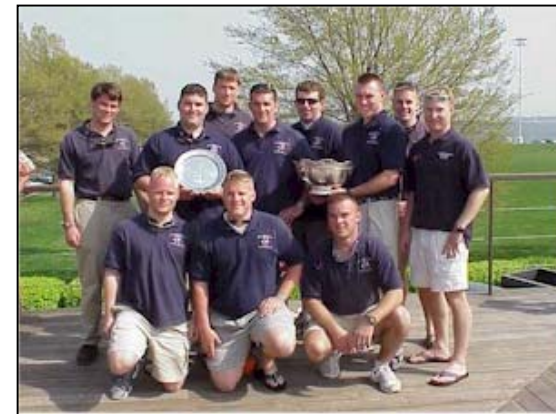
Practical Exam...

Most frequently noted errors

- The Chart Shift - Advancing the DR
- The three Line Of Position Fix
 - The LOPs are construction lines...
- The DR
 - Bold and obvious
- Six Rules of DR
 - Know and apply
 - The single line of position
- Latitude and Longitude
 - Determining latitude and longitude
 - Logging it: $38^{\circ} 14' 46''$ N $076^{\circ} 38' 14''$ W



Preparing Midshipman To Be Professional Officers In the Naval Service



Questions?



USNA Sailing homepage

www.usna.edu/SailingTeam

Select:

CSNTS

Offshore

Training



Navigation Related Incident Summary

Summer 2002

- Grounding - Coaster's Harbor
 - Touched while entering
 - Crew not fully briefed for entering



Navigation Related Incident Summary

Summer 2002

- Grounding – Bermuda
 - Helmsman unaware of where reef was
 - OIC did not step in correct
 - Boat subsequently hit two different piers prior to leaving St. Georges Harbor



Navigation Related Incident Summary

Summer 2002

- Grounding - Delaware River
 - Block II
 - Tacking up Delaware River due to low fuel
 - Helmsman was not proactive (waiting for inst)
 - Mind was on getting back for the 4th, not the cruise
 - What was the WC doing? We don't know
 - Helmsman was not check fathometer



Navigation Related Incident Summary

Summer 2002

- Grounding - Exit of C&D Canal
 - End of cruise letdown
 - Priorities not maintained
 - Ran aground on the north side of the channel at a turn
 -



Navigation Related Incident Summary

Summer 2002

- Grounding - Coast of Maine
 - Wasn't maintaining a constant plot



Navigation Related Incident Summary Summer 2002

- Grounding - Eastern Bay



Navigation Related Incident Summary

Summer 2002

- Grounding - Greenbury Point
 - CSNTS departing for remote port
 - OIC preoccupied with teaching onboard
 - Lack of communication between the helmsman and nav plotter



Navigation Related Incident Summary

Summer 2002

- Allision with bridge – Newport
 - Tried to go under side span without checking



Navigation Related Incident Summary

Summer 2002

- Allision with buoy – Delaware River (motoring)
 - OIC was busy down below with engine
 - Helmsman was driving course staring at compass
 - Nav plotter not communicating what to look for
 - Ran into a lighted buoy